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(54) Simulated flame effect space heaters

(57) A flame effect heater comprises: a primary heat source (2); a secondary heat and light source in the form of lamps (16); a flame effect spinner (17) mounted to rotate in a hot air stream rising from the secondary source; a fire back (21) having a matt front surface (26), the spinner and the fire back being mutually arranged such that light from the secondary source can intermittently illuminate the fire back; and a translucent front screen spaced (22) forwards from the fire back to permit the light to reach the fire back and having a matt back surface (25). The lamps (16) have a transparent red varnish which is absent in strips (31).

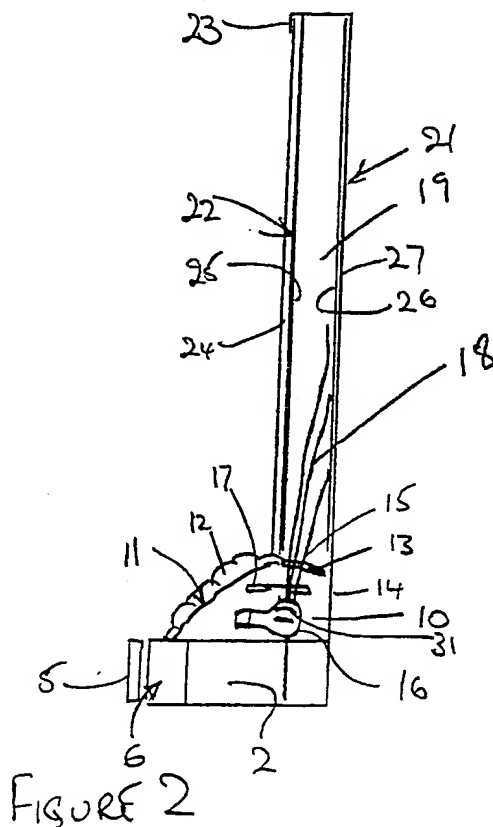


FIGURE 2

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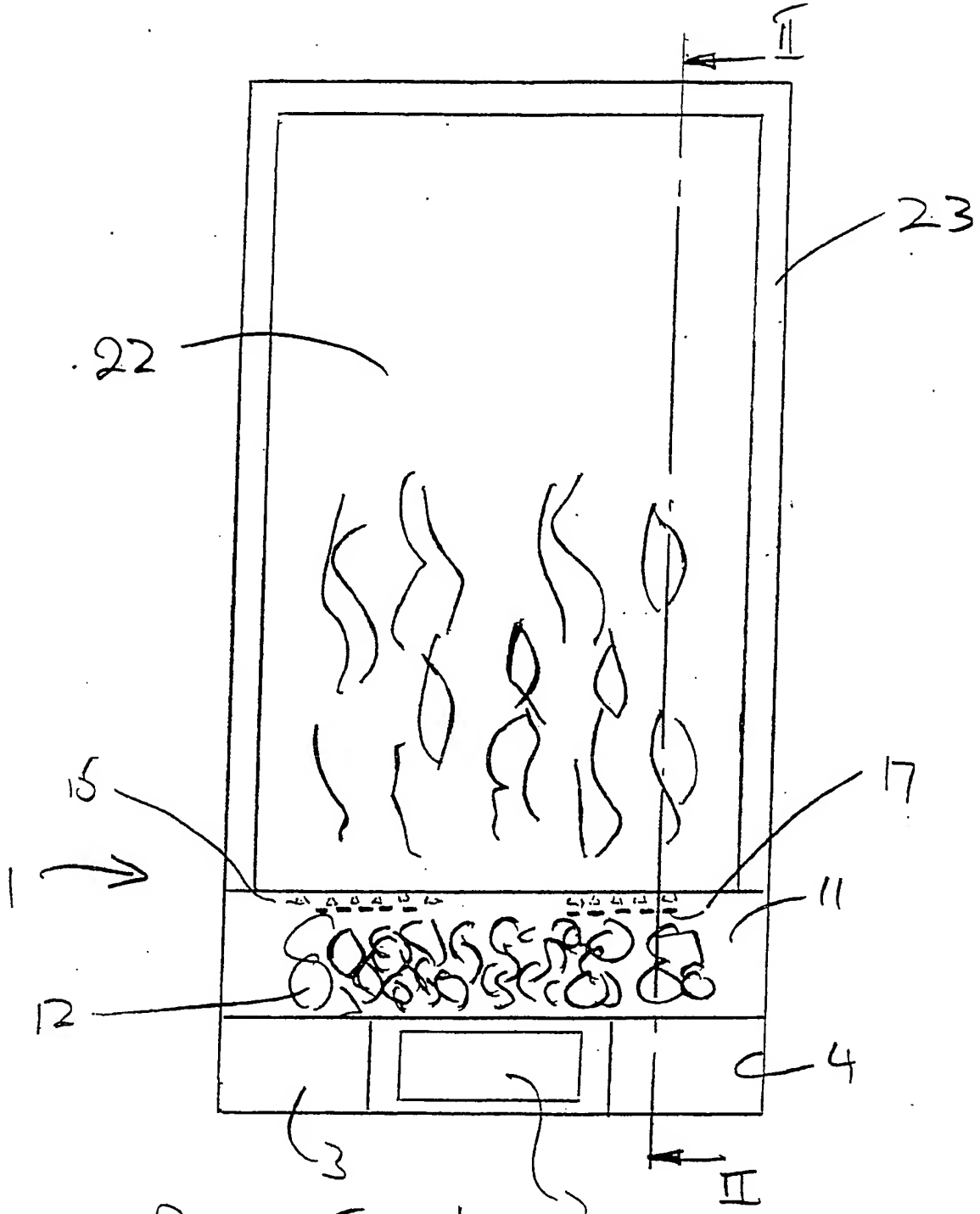


FIGURE 1

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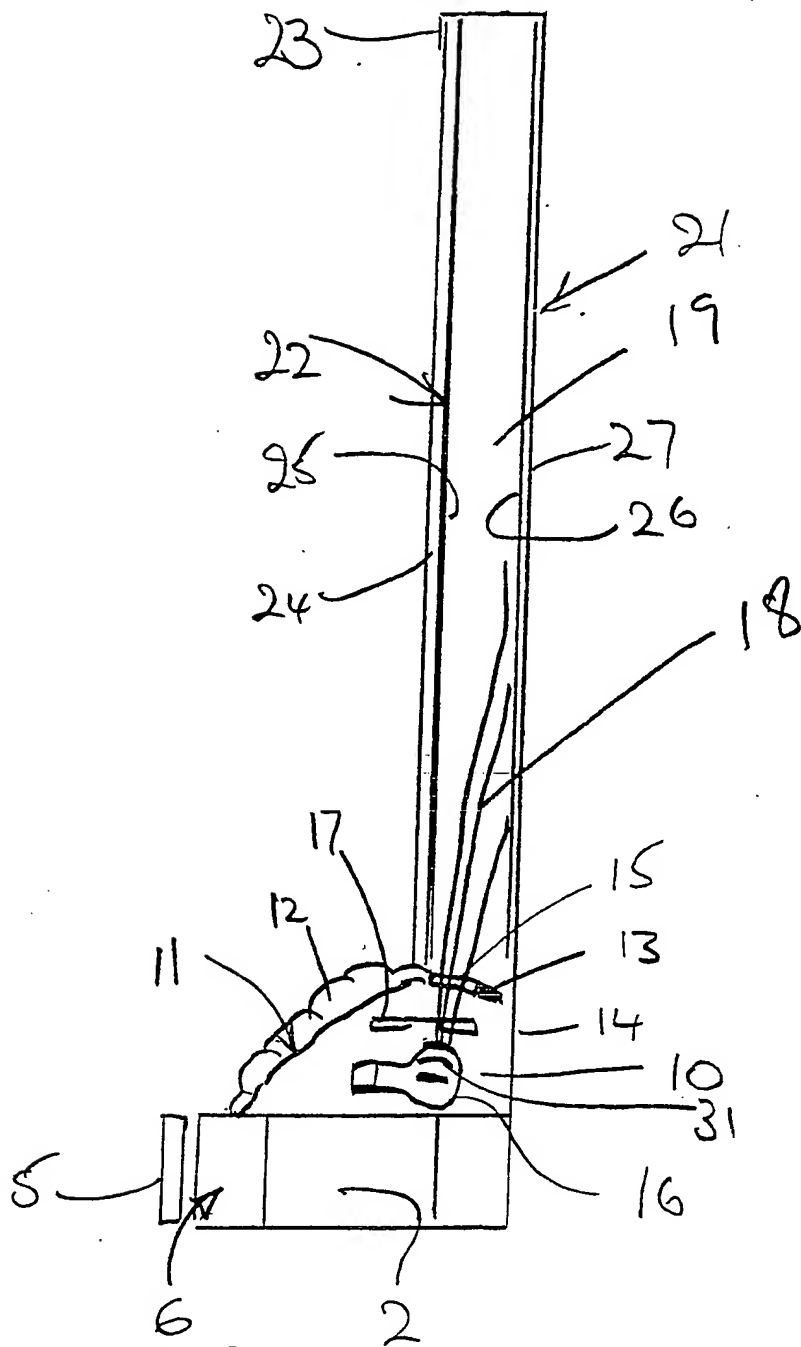


FIGURE 2

FLAME EFFECT HEATER

The present invention relates to a heater having a flame effect.

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The action of flames in a grate is a widely appreciated effect, and many electrically powered fires incorporate devices to simulate the effect of flames.

10 This can be done by means of a spinner, that is a disk having vanes bent from it, mounted above a source of heat and light, such as an electric lamp. The effect can appear crude, the "flames" appearing to have a circular movement across a "fire back".

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A recent proposal described in British Patent No 2,230,335 uses vertically arranged twisted strips to reflect light through a translucent screen. This expedient is both expensive and renders the heater thick in its front to back
20 direction.

The object of my invention is to provide an improved flame effect heater.

25 In accordance with my invention I provide a flame effect heater comprising:
a primary heat source;
a secondary heat and light source;
a flame effect spinner mounted to rotate in a hot air
30 stream rising from the secondary source;
a fire back having a matt front surface, the spinner and the fire back being mutually arranged such that light from the secondary source can intermittently illuminate the fire back; and
35 a translucent front screen spaced forwards from the

fire back to permit the light to reach the fire back and having a matt back surface.

My experience is that the matt finishes of the fire
5 back and the front screen diffuse the light reaching the fire back to such extent as to provide a realistic flame effect.

The matt back surface of the front screen may be
10 provided by a sheet of matt surface translucent plastics material secured immediately behind a screen plate, which is preferably of glass. Alternatively, the matt surface may be provided as an etched, sand blasted or similarly treated surface of the plate which alone forms the screen.

15 Similarly, the matt front surface of the fire back may be provided by a sheet of matt-surface, translucent, plastics material secured immediately in front of the fire back as such, which is preferably of black painted metal.
20 Alternatively, the matt surface may be provided as a matt black front surface of the fire back. A further alternative is for the fire back to be of glass or translucent sheet material having a matt front surface and a black painted back surface.

25 Whilst a single spinner and secondary source may be adequate, in the preferred embodiment two spinners and two electric lamps as secondary sources are provided. An enhanced effect is provided by the lamps having thin red
30 paint which is removed in strips to radiate both red and white light. Interposed between the spinners and the fire back is a further translucent member itself having slots through which light from the lamps can reach the fire back.

35 The primary heat source can be a radiant, convective or

fan electric heating means.

To help understanding of the invention, a specific embodiment thereof will now be described with reference to the accompanying drawings, in which:

Figure 1 is a front view of a flame effect heater of the invention and

Figure 2 is a cross-sectional side view of the heater, taken on the line II-II in Figure 1.

The heater 1 shown in the drawings has an electric fan heating unit 2 incorporated in bottom compartment 3 of a casing 4 of the heater. In use, an imitation fender 5, shown only in Figure 2, is placed in front of a bottom opening 6 in the casing through which heated air is blown.

A middle compartment 10 is provided above the fan heater's compartment 3. It has a curved front and top cover 11 which is of glass reinforced plastics material with coals 12 adhered to it. A rear lip 13 of the cover extends back to a back wall 14 of the compartment and is provided with slots 15. Beneath the slots a pair of electric lamps 16 and spinners 17 are arranged so that light 18 from the lamps can, when the spinners have turned to an appropriate angle, project through the slots 15 in a slightly backwards direction into a third or upper compartment 19 of the heater.

The upper compartment is defined between a "fire back" 21 and a front screen 22. The fire back is so called because it is in the position of a conventional fire back of a conventional grate and because the light 18 is projected onto it. A sheet metal frame 23 defines the two edges and top of the upper compartment and supports the front screen. The constructional details are not described herein because

they are within the ability of the skilled man.

As shown the front screen 22 is comprised of a glass plate 24 with - behind it - a translucent plastics material sheet 25 adhered peripherally to the plate, along the edges whereby the adhesive is hidden by the frame 23. The sheet 25 has a matt finish to cause it to diffuse light incident on it. A similar sheet 26 is provided in front of a matt black painted steel sheet 27, which together constitute the fire back 21. This arrangement of the fire back provides that the light 18 diffusely illuminates and reflects from the fire back. The reflected light is further diffused by the front screen when viewed by a user of the heater.

The lamps 16 have a transparent red varnish which is absent in strips 31. The slots 15 taper with their thinner ends towards the front. The spinners 17 contra-rotate. The result is that a series of simulated "flames" appear to move across each other on the fire back. The tapered slots restrict the apparent movement of the flames and cause them to appear wider at the bottom. The flames generated by one lamp will appear white in certain areas due to the light coming to those areas passing through the clear strips 31 on the bulb of the lamp. However it is likely that this white light, which will be intermittent, will have red light from the other lamp intermittently superimposed on it. The effect appears random, as is the nature of real flames. The random nature is emphasised by the diffusion provided at the fire back and at the front screen.

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The invention is not intended to be restricted to the details of the above described embodiment. For instance the front screen can be simplified to be of a single glass plate with a diffusing, sand blasted, back surface. Similarly the fire back may be merely a matt black painted sheet.

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CLAIMS:

1. A flame effect heater comprising:
 - a primary heat source;
 - a secondary heat and light source;
 - 5 a flame effect spinner mounted to rotate in a hot air stream rising from the secondary source;
 - a fire back having a matt front surface, the spinner and the fire back being mutually arranged such that light from the secondary source can intermittently illuminate the
 - 10 fire back; and
 - a translucent front screen spaced forwards from the fire back to permit the light to reach the fire back and having a matt back surface.
2. A flame effect heater as claimed in claim 1, wherein
- 15 the matt back surface of the front screen is provided by a sheet of matt surface translucent plastics material secured immediately behind a screen plate, which is preferably of glass.
3. A flame effect heater as claimed in claim 1, wherein
- 20 the matt surface of the front screen in the form of a screen plate is provided as an etched, sand blasted or similarly treated surface of the plate, which alone forms the screen.
4. A flame effect heater as claimed in claim 1, claim 2 or claim 3, wherein the matt front surface of the fire back is
- 25 provided by a sheet of matt-surface, translucent, plastics material secured immediately in front of the fire back as such, which is preferably of black painted metal.
5. A flame effect heater as claimed in claim 1, claim 2 or claim 3, wherein the matt front surface of the fire back is
- 30 a matt black front surface of the fire back, which alone constitutes the fire back.
6. A flame effect heater as claimed in claim 1, claim 2 or claim 3, wherein the fire back is of glass or translucent sheet material having a matt front surface and a black
- 35 painted back surface.

7. A flame effect heater as claimed in any preceding claim, wherein two spinners and two electric lamps as secondary sources are provided.

8. A flame effect heater as claimed in any preceding claim, wherein electric lamp(s) are provided as the secondary source(s), the or each lamp having thin red paint which is removed in strips to radiate both red and white light.

9. A flame effect heater as claimed in any preceding claim, including a further translucent member interposed between the spinners and the fire back, the further translucent member itself having slots through which light from the secondary sources can reach the fire back.

10. A flame effect heater substantially as hereinbefore described with reference to the accompanying drawings.

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Examiner's report to the Comptroller under Section 17
(The Search report)

GB 2412000.1

Relevant Technical Fields

(i) UK Cl (Ed.N) F4W (W57)

(ii) Int Cl (Ed.6) F24C 15/06

Search Examiner
M C MONK

Date of completion of Search
10 JULY 1995

Databases (see below)

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

Documents considered relevant following a search in respect of Claims :-
ALL

(ii) ONLINE DATABASE: WPI

Categories of documents

- X: Document indicating lack of novelty or of inventive step. P: Document published on or after the declared priority date but before the filing date of the present application.
- Y: Document indicating lack of inventive step if combined with one or more other documents of the same category. E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.
- A: Document indicating technological background and/or state of the art. &: Member of the same patent family; corresponding document.

Category	Identity of document and relevant passages	Relevant to claim(s)
X	GB 1457537 (PHILIPS) reflector (5) has non-reflective areas	1 at least

Databases: The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).